

## REMARKS

In the parent application, claims 1-7 were examined. With the Preliminary Amendment, independent claims 1, 6 and 7 are amended. Claims 1-7 remain in the application.

Applicants believe that claims 1, 6 and 7, as amended, are supported by the specification at page 11 lines 5-8 and 17-27, page 12 lines 1-6 and figures 3B, 3C, 4, 5, 6 and 7.

In the parent application, the Patent Office rejected claims 1-7 under 35 U.S.C. § 103(a). Reconsideration of the claim rejections is requested in view of the above amendments and the following remarks.

### I. Rejection of Claims 1-7 under 35 U.S.C. § 103(a)

Claims 1 and 3 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,789,915 issued to Scobey (hereinafter "Scobey"), in view of U.S. Patent No. 6,324,192 issued to Tayebati (hereinafter "Tayebati") and U.S. Patent No. 4,377,324 issued to Durand et al (hereinafter "Durand"). Claim 2 stands rejected under 35 U.S.C. § 103(a) as being obvious over Scobey, Tayebati, and Durand further in view of U.S. Patent No. 4,751,509 issued to Kubota et al (hereinafter "Kubota") and U.S. Patent No. 6,160,834 issued to Scott (hereinafter "Scott"). Claim 4 stands rejected under 35 U.S.C. § 103(a) as being obvious over Scobey, Tayebati, and Durand and in further view of U.S. Patent No. 5,990,769 issued to Tam (hereinafter "Tam"). Claim 5 stands rejected under 35 U.S.C. § 103(a) as being obvious over Scobey, Durand and Tam and in further view of U.S. Patent No. 4,887,109 issued to Fujita et al (hereinafter "Fujita"). Claims 6 and 7 stand rejected under 35 U.S.C. § 103(a) as obvious over Scobey in view of Durand.

Independent claims 1, 6 and 7 have been amended to include the elements of an elastic member coupled to the moveable mirror and moving unit. Applicants believe that the cited references do not teach these elements of claims 1, 6 and 7.

The invention as claimed in claims 1, 6 and 7 includes an actuator having a moving unit. The moving unit includes a first electrode. The actuator also includes a fixed unit having a second electrode and an elastic member for delivering the kinetic force of the moving unit in an adjustable

manner with a predetermined ratio in order to finely control the air gap between the fixed mirror and the moving mirror. The elastic member also maintains a predetermined gap between the moving unit and the fixed unit. The fixed unit is attached to the fixed mirror and the moving unit is attached to the moving mirror through the elastic member. See Exhibit A, which is a marked up version of Figure 4 highlighting the above mentioned features of the claimed invention.

The moving unit and the fixed unit are separated by a predetermined gap. The moving unit is pulled toward the fixed unit by an electrostatic force, which is generated by the reaction of the first and second electrode. This movement of the moving unit also alters the position of the moving mirror in relation to the fixed mirror and thereby the gap between the two mirrors can be adjusted. The movement of the moving mirror is affected through the elastic member. The elastic member conducts the kinetic force of the moving unit to the moving mirror. This allows for the adjustment of the position of the moving mirror based on a predetermined ratio. Figure 7 of the application is a graph of the ratio, which may be 1:19. The elastic member thereby allows for a fine control of the relative positions of the fixed and moving mirrors.

The cited references do not teach these claimed structures. The Examiner has not identified and the Applicants are unable to identify any part of Durand that teaches these structures for adjusting an air gap between a fixed and moving mirror. Scobey does not teach a moveable mirror or the adjustment of such a mirror. Also, Tayebati does not teach or suggest an elastic member for adjusting the kinetic force and enabling the fine control of the air gap between the moving mirror and the fixed mirror. Therefore, the cited references do not teach or suggest the elements of independent claims 1, 6 and 7. Accordingly, reconsideration and withdrawal of the obviousness rejection of these claims are requested.

In regard to dependent claims 2-5, these claims depend from independent claims 1, 6 and 7 and incorporate the limitations thereof. Thus, at least for the reasons mentioned in regard to claims 1, 6 and 7 the dependent claims 2-5 are not obvious over Durand, Scobey and Tayebati. Further, the Examiner has not indicated and Applicants have been unable to discern any part of Kubota, Scott, Fujita or Tam that teach or suggest an elastic member to allow the adjustment of a moving

mirror at a predetermined ratio. Thus, the cited references do not teach or suggest each of the elements of these claims. Accordingly, reconsideration and withdrawal of the obviousness rejection of claims 2-5 are requested.

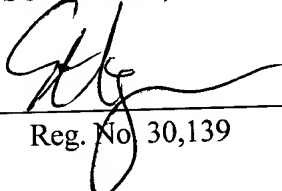
### CONCLUSION

In view of the foregoing, it is believed that all claims now pending, namely claims 1-7, patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

Respectfully submitted,

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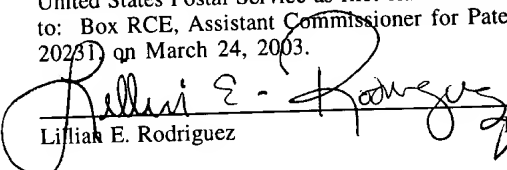
Dated: 3/24, 2003

  
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3-24-03  
March 24, 2003

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**  
**IN THE CLAIMS**

Please amend the claims as follows:

1. (Amended) An optical tunable filters comprising:  
a fixed mirror including a number of first erecting plates;  
a movable mirror including a number of second erecting plates;  
an air gap disposed between the fixed mirror and the movable mirror; and  
an actuator reciprocating the movable mirror for changing the width of the air gap, wherein  
the actuator [utilizes an electrostatic force as driving force and lever mechanism for accurating  
displacement and improving a tolerance of the air gap between the fixed mirror and the moveable  
mirror.] includes:

a moving unit, which is coupled to the moving mirror, having a first electrode;  
a fixed unit, which is coupled to the fixed mirror, having a second electrode for  
generating an electrostatic force to pull the moving unit by reacting to the first electrode in  
order to control a gap between the moving unit and the fixed unit; and  
an elastic member connecting the moving mirror and the moving unit for  
delivering kinetic force of the moving unit in an adjustable manner with a predetermined  
ratio in order to finely control the air gap between the fixed mirror and the moving mirror.

6. (Amended) An optical communication device for demultiplexing various  
wavelengths, comprising:

an input optical fiber;  
a number of output optical fibers; and  
an array of optical tunable filters, wherein each of the optical tunable filters is regularly  
arranged to correspond to one output optical fiber, each of the optical tunable filters including:  
a fixed mirror including a number of first erecting plates;  
a movable mirror including a number of second erecting plates;

an air gap disposed between the fixed mirror and the movable; and  
an actuator reciprocating the movable mirror for changing the width of the air gap[.], wherein the actuator has:

a moving unit, which is coupled to the moving mirror, having a first electrode;

a fixed unit, which is coupled to the fixed mirror, having a second electrode for generating an electrostatic force to pull the moving unit by reacting to the first electrode in order to control a gap between the moving unit and the fixed unit; and

an elastic member connecting the moving mirror and the moving unit for delivering kinetic force of the moving unit in an adjustable manner with a predetermined ratio in order to finely control the air gap between the fixed mirror and the moving mirror.

7. (Amended) An optical communication device for multiplexing various wavelengths, comprising:

a number of input optical fibers;

an output optical fiber; and

an array of optical tunable filters, wherein each of the optical tunable filters is regularly arranged to correspond to one input optical fiber, each of the optical tunable filters including:

a fixed mirror including a number of first erecting plates;

a movable mirror including a number of second erecting plates;

an air gap disposed between the fixed mirror and the movable mirror; and

an actuator reciprocating the movable mirror for changing the width of the air gap[.]

, wherein the actuator has:

a moving unit, which is coupled to the moving mirror, having a first electrode;

a fixed unit, which is coupled to the fixed mirror, having a second electrode for generating an electrostatic force to pull the moving unit by reacting to the first electrode in order to control a gap between the moving unit and the fixed unit; and

an elastic member connecting the moving mirror and the moving unit for delivering kinetic force of the moving unit in an adjustable manner with a predetermined ratio in order to finely control the air gap between the fixed mirror and the moving mirror.



**EXHIBIT A**

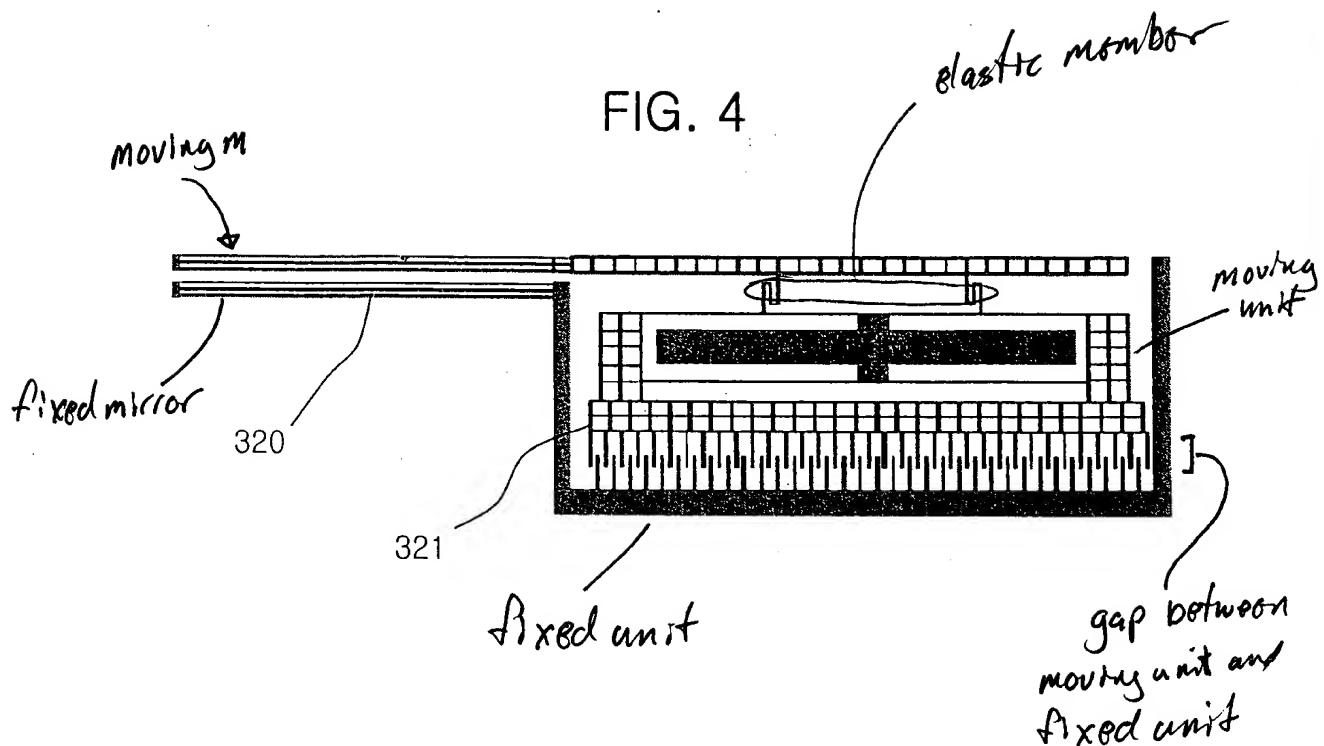


Exhibit A